CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATIONS

RESIT/SPECIAL EXAMINATION

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE

BMET 315: MOLECULAR PHYSIOLOGY

STREAMS: BSC BMET **TIME: 2 HOURS**

DAY/DATE: WEDNESDAY 11/08/2021 **8.30 A.M – 10.30 A.M.**

INSTRUCTIONS

- **Answer Question ONE and any TWO questions**
- **Do not write on the question paper**

QUESTION ONE **(30 Marks)**

(a) Discuss the structure of skeletal muscle sarcomere. **(5 Marks)**

(b) Using structural and chemical formulae describe **heme** biosynthesis in the erythroid cells. **(9 Marks)**

(c) Describe energy metabolism during cardiac muscle contraction. **(8 Marks)**

(d) Discuss role of Calcium ions in the regulation of phototransduction cascade. **(8 Marks)**

QUESTION TWO **(20 Marks)**

(a) Discuss the biosynthesis and inactivation of serotonin neurotransmitters. **(5 Marks)**

(b) Explain why low levels of serotonin in the brain is dangerous. **(6Marks)**

(c) Describe mode of action of Glutamate as an inhibitory and excitatory neurotransmitter in the central nervous system. **(9 Marks)**

QUESTION THREE **(20 Marks)**

(a) Discuss the mode of action and physiological role of G-protein coupled receptors. **(10 Marks)**

(b) Discuss mechanism of signal transduction in bacteria chemotaxis. **(10 Marks)**

QUESTION FOUR **(20 Marks)**

(a) Discuss biochemical basis of hemolytic jaundice. **(8 Marks)**

(b) Explain the rationale and application of phototherapy in newborns. **(12 Marks)**
